

CLAIMS

We claim:

- 1           1.       A metal block for use in a high throughput RNA laboratory comprising:  
2                   a plurality of wells, each said well having an open cylindrical upper end and a  
3 closed conical lower end, each said well accommodating a biological sample receptacle having  
4 substantially the same shape as said well, wherein each said well maintains the temperature of a  
5 biological sample in the receptacle during sample set-up and prior to reverse transcriptase and  
6 polymerase chain reaction analysis.
  
- 1           2.       The metal block of claim 1 wherein said metal is aluminum.
  
- 1           3.       The metal block of claim 1 wherein the biological sample receptacles are  
2 microtubes.
  
- 1           4.       The metal block of claim 1 wherein the biological sample receptacles are  
2 comprised within a 96-well plate.
  
- 1           5.       The metal block of claim 1 wherein the biological sample receptacles are  
2 comprised within a 384-well plate.
  
- 1           6.       The metal block of claim 1 wherein the temperature maintained is below room  
2 temperature.

1           7.     A metal block for an automated liquid handling device used in genetic analysis  
2 comprising:

3                 a plurality of wells, each said well having an open cylindrical upper end and a  
4 closed conical lower end, each said well accommodating a biological sample receptacle having  
5 substantially the same shape as said well wherein the temperature of a biological sample in the  
6 receptacle is maintained.

1           8.     The metal block of claim 7 wherein said metal is aluminum.

1           9.     The metal block of claim 7 wherein the biological sample receptacles are  
2 microtubes.

1           10.    The metal block of claim 7 wherein the biological sample receptacles are  
2 comprised within a 96-well plate.

1           11.    The metal block of claim 7 wherein the biological sample receptacles are  
2 comprised within a 384-well plate.

1           12.    The metal block of claim 7 wherein the automated liquid handling device  
2 comprises a surface being maintained below room temperature.

1           13.     The metal block of claim 7 wherein the temperature maintained is below room  
2     temperature.

1           14.     An apparatus for an automated liquid handling device used in genetic analysis  
2     comprising:

3                     a plurality of biological sample receptacles; and

4                     a metal block comprising a plurality of wells, each said well having an open  
5     cylindrical upper end and a closed conical lower end, each said well accommodating said  
6     biological sample receptacle having substantially the same shape as said well, wherein each said  
7     well maintains the temperature of a biological sample in the receptacle.

1           15.     An improved automated liquid handling device for genetic analysis comprising:

2                     a metal block comprising a plurality of wells, each said well having an open  
3     cylindrical upper end and a closed conical lower end, each said well accommodating a biological  
4     sample receptacle having substantially the same shape as said well, wherein each said well  
5     maintains the temperature of a biological sample in the receptacle during sample set-up and prior  
6     to polymerase chain reaction analysis.

1           16.     An improved automated liquid handling device for genetic analysis of biological  
2     samples, the handling device having a table, a pod for transferring fluid to a well located on the  
3     table and a means for moving the pod relative to the table between selected locations on said  
4     table, wherein the improvement comprises:

5                 a metal block comprising a plurality of wells, each said well having an open  
6     cylindrical upper end and a closed conical lower end, each said well accommodating a biological  
7     sample receptacle having substantially the same shape as said well, wherein the temperature of a  
8     biological sample in the receptacle during sample set-up and prior to polymerase chain reaction  
9     analysis is maintained.

1           17.     An apparatus for high throughput RNA analysis of a biological sample  
2     comprising:

3                 a metal block comprising a plurality of wells, each said well having an open  
4     cylindrical upper end and a closed conical lower end, each said well accommodating a biological  
5     sample receptacle having substantially the same shape as said well, wherein each said well  
6     maintains the temperature of the biological sample in the receptacle;

7                 an automated liquid handling device; and

8                 a PCR amplification device wherein the biological sample is inserted into the  
9     receptacles of said wells of said metal block by said automated liquid handling device and said  
10    PCR amplification device causes reverse transcriptase polymerase chain reaction to determine  
11    the presence of RNA or DNA.

1           18.     The apparatus of claim 17 wherein said reverse transcriptase polymerase chain  
2     reaction is one step.

1           19.     The apparatus of claim 17 wherein said reverse transcriptase polymerase chain  
2     reaction is two steps.

1           20.     A method of handling a liquid biological sample in a high throughput RNA  
2     laboratory, comprising the steps of:

3                     chilling a metal block, the metal block having a plurality of wells, each well  
4     having an open cylindrical upper end and a closed conical lower end, each well accommodating  
5     a biological sample receptacle having substantially the same shape as the well, wherein the  
6     temperature of the biological sample is maintained;

7                     inserting the biological sample receptacle into the metal block;

8                     positioning the metal block onto an automated liquid handling device; and

9                     transferring the biological sample into biological sample receptacle in the metal  
10    block for reverse transcriptase and polymerase chain reaction analysis.

1           21.    A method of handling a liquid biological sample in a high throughput RNA  
2 laboratory, comprising the steps of:

3                   cooling a metal block, the metal block having a plurality of wells, each well  
4 having an open cylindrical upper end and a closed conical lower end, each well accommodating  
5 a biological sample receptacle having substantially the same shape as the well, wherein the  
6 temperature of the biological sample is maintained;

7                   inserting the biological sample receptacle into the metal block;

8                   positioning the metal block onto an automated liquid handling device; and

9                   transferring the biological sample into biological sample receptacle in the metal  
10 block for reverse transcriptase and polymerase chain reaction analysis.